

REMARKS

Reconsideration of the above-identified patent application in view of the amendments above and the remarks following is respectfully requested.

Claims 3 and 4 are in this case. Claims 3 and 4 have been rejected under § 103(a).

The claims before the Examiner are directed toward a method of preparing a wire bonding capillary. The entire pressing face of the tip of the capillary is coated with a layer of polymeric material that includes a thermoplastic polymer such as poly-p-xylyene ("parylene").

§ 103(a) Rejections – Gilding '506 in view of Evans '365

The Examiner has rejected claims 3 and 4 under § 103(a) as being unpatentable over Gilding, US Patent No. 4,049,506 (henceforth, "Gilding '506") in view of Evans, US Patent No. 4,950,365 (henceforth, "Evans '365"). The Examiner's rejection is respectfully traversed.

Briefly, Gilding '506 teaches coating the tip 13 of a wire bonding capillary 11 with a thin layer 16 of osmium, ruthenium or their alloys. Evans '365 teaches coating metal tools such as "screwdriver blades, drill bits, saw blades, wrenches, pliers, socket sets, screws, hammer heads, hinges, nut drivers, shears and the like" (column 4 lines 48-50) with a thin layer of a uniform conformal polymeric material such as parylene.

The Examiner proposes that it therefore would have been obvious to coat the tip of a wire bonding capillary with parylene. Applicant respectfully denies this inference, for two reasons.

First, one ordinarily skilled in the art would lack a motivation to combine the two references. Evans '365 teaches that coating a substrate with parylene renders the

substrate "wear-resistant, decorative and corrosion free" (column 3 line 61). But these are not the properties that the present invention is intended to impart to a wire bonding capillary. The problem solved by the present invention is the buildup of contaminants deposited on the surface of the tip and bore of a wire bonding capillary, not wear of the wire bonding capillary or corrosion of the wire bonding capillary.

Second, even if a motivation were to exist to combine the two references, this still is insufficient to render the present invention obvious. One ordinarily skilled in the art also would have to have a reasonable expectation of success. *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988): "The consistent criterion for determination of obviousness is whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have a reasonable likelihood of success, viewed in the light of the prior art." (emphasis added) In the present case, one ordinarily skilled in the art would not have a reasonable expectation of success, for the reasons set forth in the Communication dated December 14, 2003. For the convenience of the Examiner, these reasons now will be repeated.

The critical passage of Evans '365 is the one in which Evans '365 explains the mechanism by which parylene protects metal surfaces from corrosion despite the fact that a

...thin parylene coating is quite soft and is easily worn off of any substrate that is subject to wear or moderate physical handling.
(column 3 lines 41-43)

The critical passage is column 4 lines 15-22:

The outer parylene layer is almost immediately worn off of the surface of the substrate, exposing the hard coated metal surface. However, the conformal quality of the parylene coating is so efficient that the areas of increased permeability associated with the coating defects--which invariably exist in the hard coated layer--are "filled" with the polymeric coating. (emphasis added)

In other words, the parylene that is effective at inhibiting corrosion is the residual parylene that remains in cracks in the metal surface after the rest of the parylene has been worn off.

Now, as noted above, the object of the present invention is to inhibit the buildup of contaminant deposits on the surface of the tip and bore of a wire bonding capillary. The nature of these deposits is described in the specification on page 5 lines 27-29:

Part of these depositions is smearred over the surface of the bore of the capillary during the travel of the bonding wire in it. Other part of these contaminants adheres to the surface of the face of the tip of capillary. (emphasis added)


and on page 6 lines 3-4 (as amended):

...a solid buffer layer, separating between the hard alumina pressing surface of the face of the capillary tip and the wire. (emphasis added)

One ordinarily skilled in the art, being aware of the nature of the deposits on the tip of a used wire bonding capillary, as described above, and being taught by Evans that the effective portion of a parylene layer is the portion that remains in the cracks of a protected surface after the rest of the parylene has been worn off the surface, would have concluded that parylene, although effective in preventing corrosion of a metal substrate, would be totally ineffective in preventing contaminant buildup on the surface of the tip of a wire bonding capillary. Therefore, the present invention, as recited in claims 3 and 4, is in fact patentable over the combined teachings of Gilding and Evans.

In view of the above remarks it is respectfully submitted that independent claim 3, and hence dependent claim 4, are in condition for allowance. Prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,



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